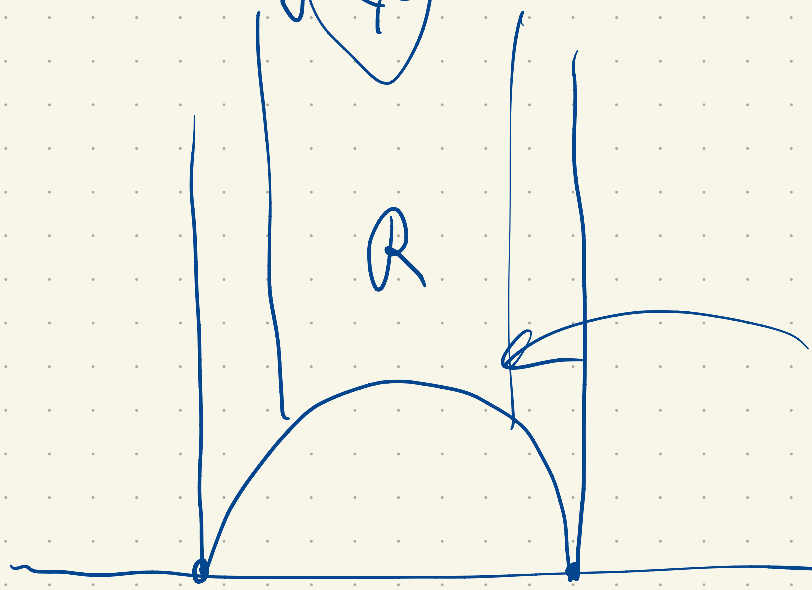
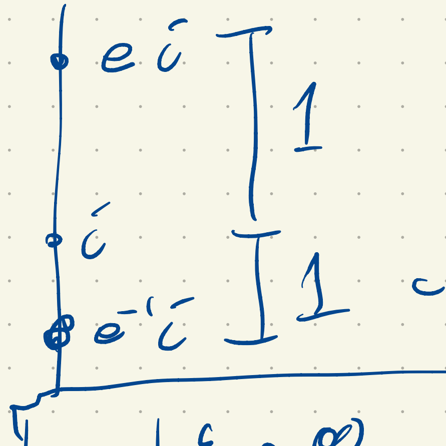
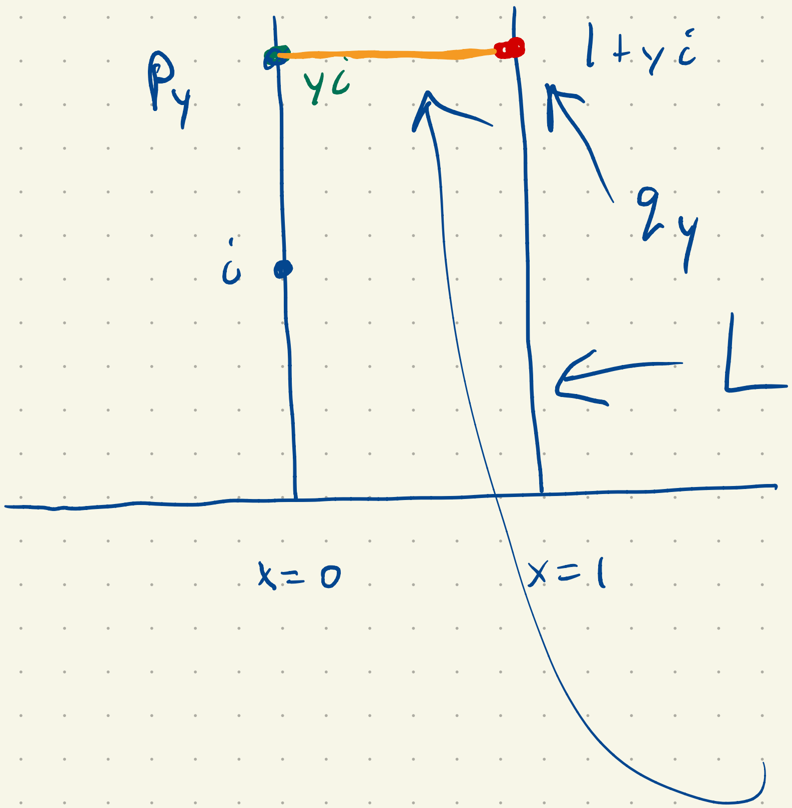
$$\int \frac{c^2}{y^2}\,dx\,dy$$

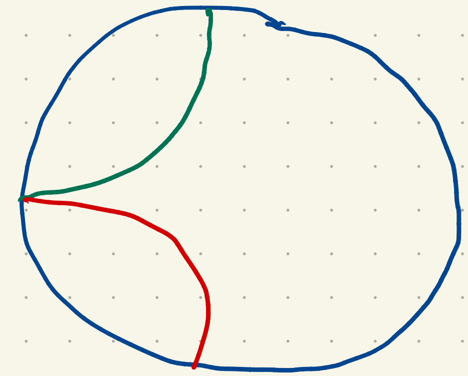




$$\boxed{\int_{-1+\varepsilon}^{1-\varepsilon}\int_{\sqrt{1-x^2}}^{\infty}\frac{1}{y^2}\,dx\,dy}$$

$$\varepsilon \to 0$$





$$\gamma(t) = t + yi \qquad 0 \leq t \leq 1$$

$$\gamma'(t) = 1$$

$$\int_0^1 \frac{|\gamma'(t)|}{y(t)}\, dt = \int_0^1 \frac{1}{y}\, dt = \frac{1}{y}$$

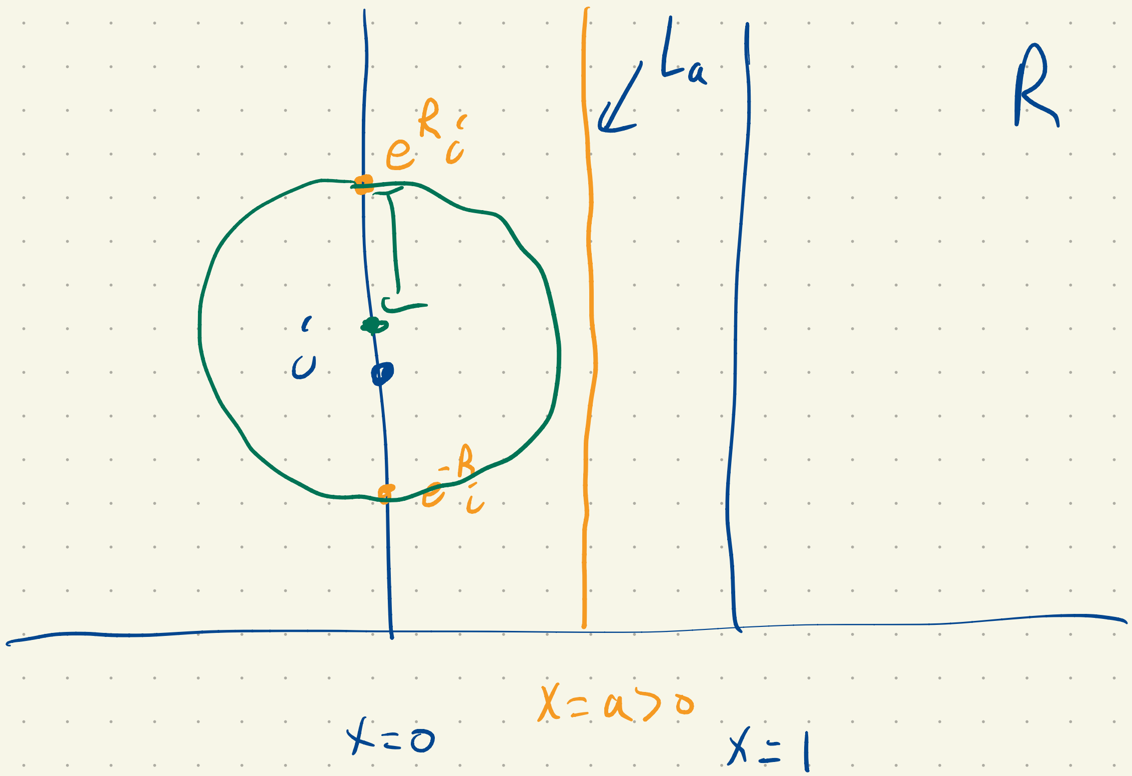
$$d(p_y, q_y) \geq d(p_y, L)$$

$$d_H(p_y, q_y) \leq \frac{1}{y}$$

$$\lim_{y \to \infty} d(p_y, L) = 0$$

$$d(p_y, L) \leq \frac{1}{y}$$

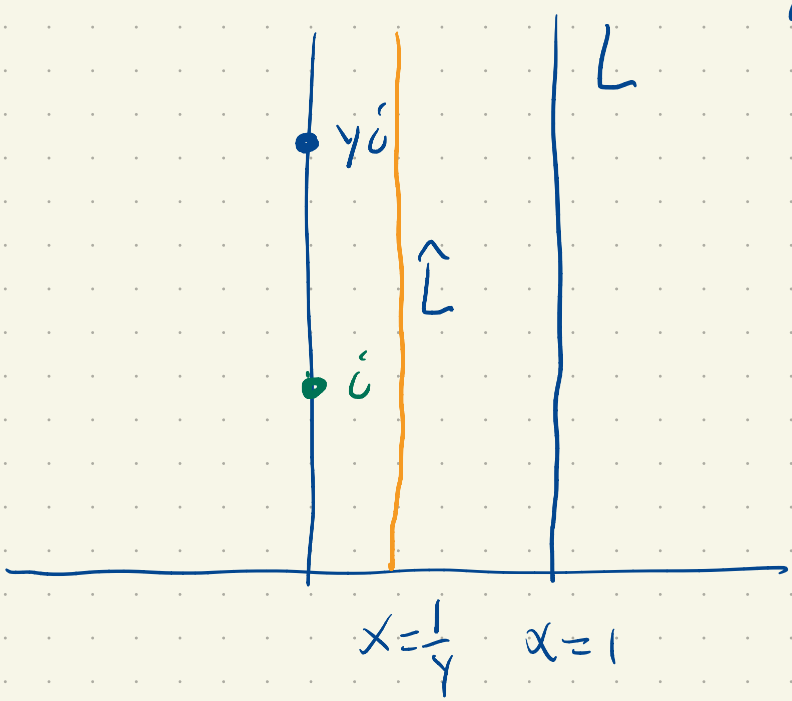
$\sinh(R)$



R

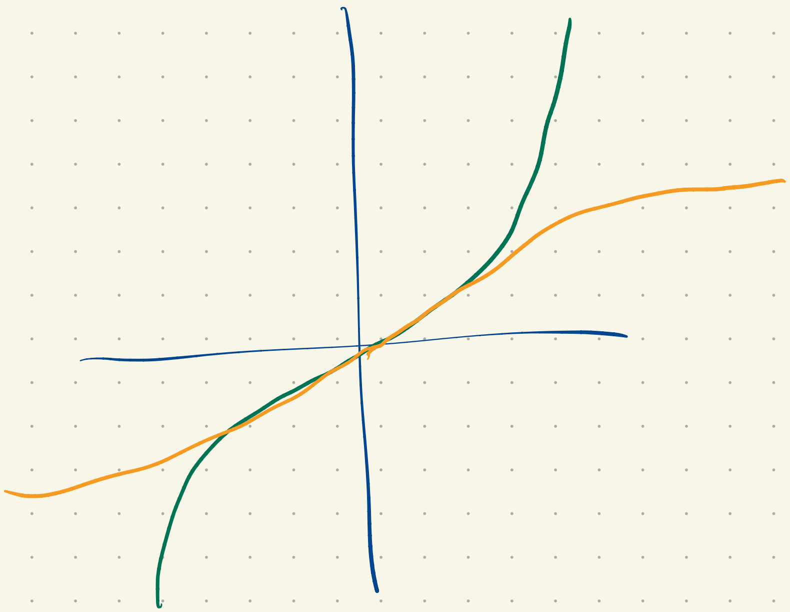
$R = \operatorname{arcsinh}(1)$

$d(i, L_a) = \operatorname{arcsinh}(a)$



$z \to \frac{1}{y} z$

$$d(yi, L) = d(i, \hat{L})$$
$$= \operatorname{arcsinh}(1/y)$$



$$d(yi, L) = \operatorname{arcsinh}(1/y)$$

as $y \to \infty$, $1/y \to 0$

$$\operatorname{arcsinh}(1/y) \to 0$$

Issues with lines:

$\boxed{\text{Generally}}$ two points $\underline{z, w}$ determine a unique line.

unless $w = z^d$ $\quad (z^d)^d = z$

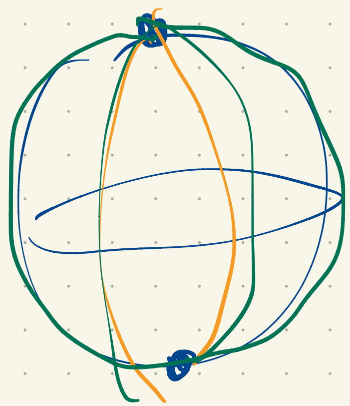
$w^d = z$

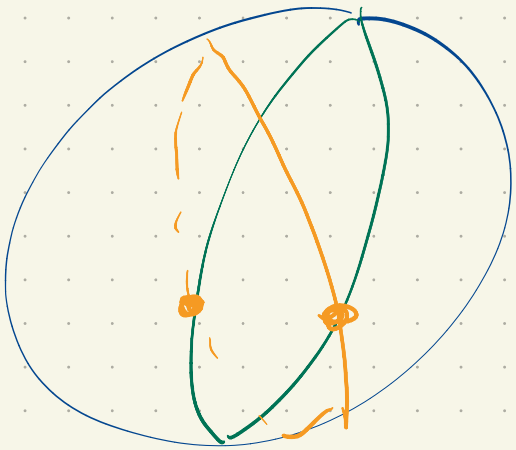
$\underbrace{z, \ z^d, \ w}$ $\longrightarrow$ 3 points determine a Möbius line.

if contains z, z^d, w, w^d.

$\underbrace{z, w, w^d}$ $\longrightarrow$ 3 points ——— ——— ——— ———

if contains z, z^d, w, w^d





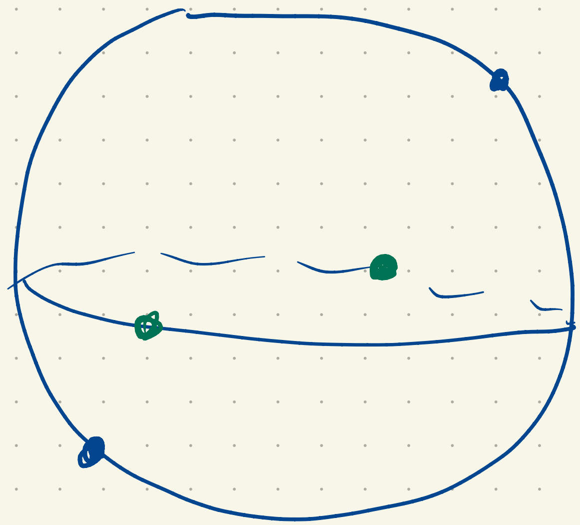
All distinct ~~circles~~ line intersect twice when once would kinda be ideal.

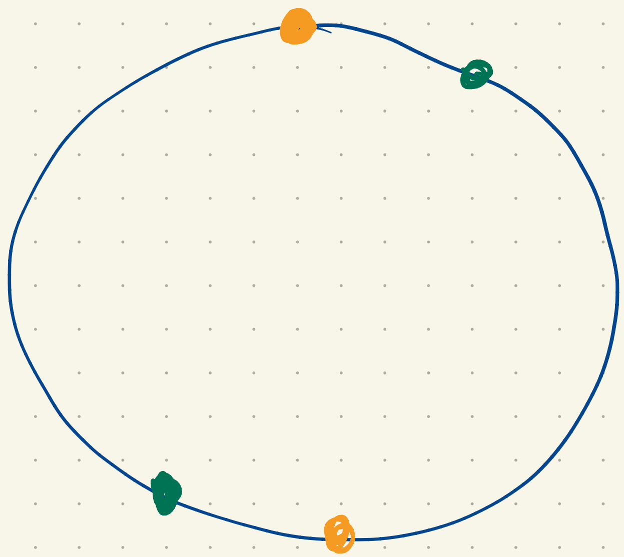
$\mathbb{C}^+$ points $\{z, z^d\}$ $z \in \mathbb{C}^+$

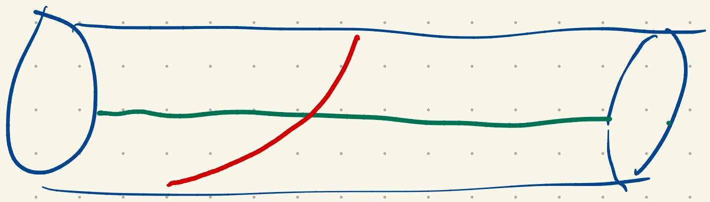
$$\underbrace{\mathbb{C}^+/\sim}_{S} = \{ \{z, z^d\} : z \in \mathbb{C}^+ \}$$

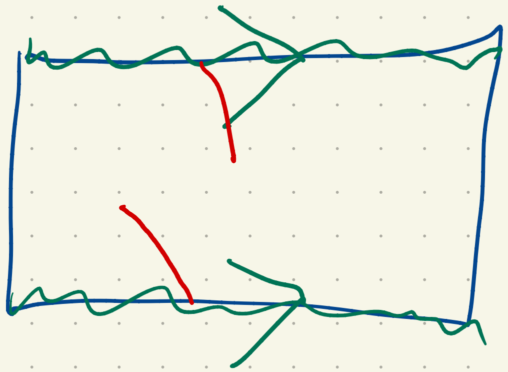
Transformation group? Same as before $T(z^d) = T(z)^d$

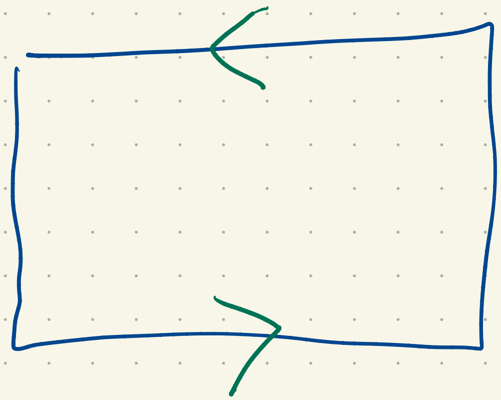
$$T(\{z, z^d\}) = \{Tz, T(z^d)\} = \{Tz, (Tz)^d\}$$

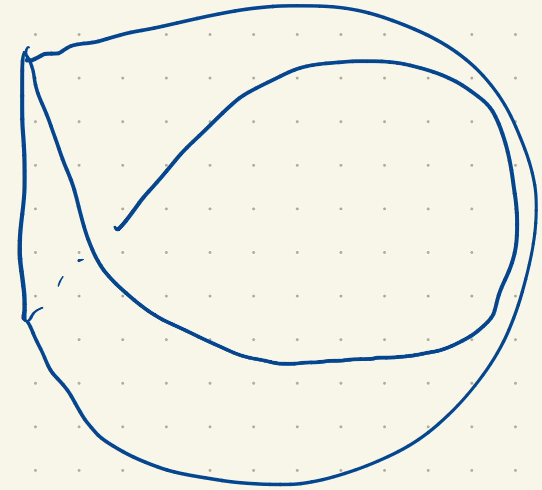


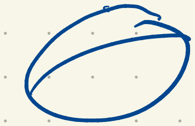


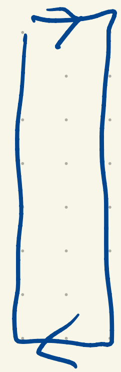




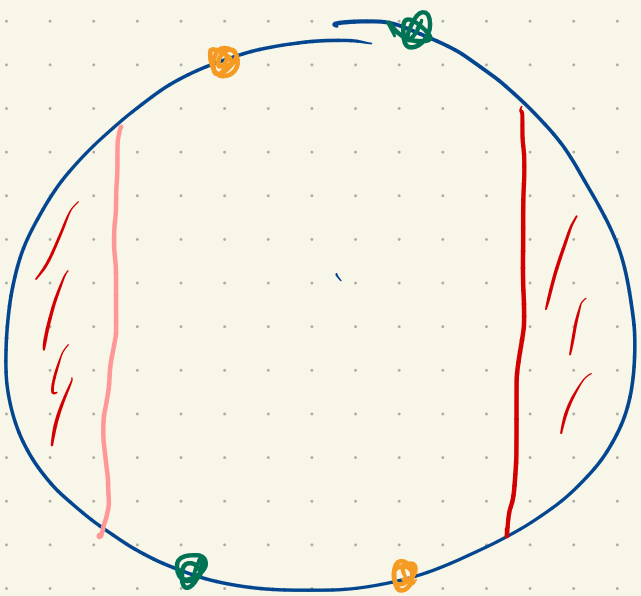


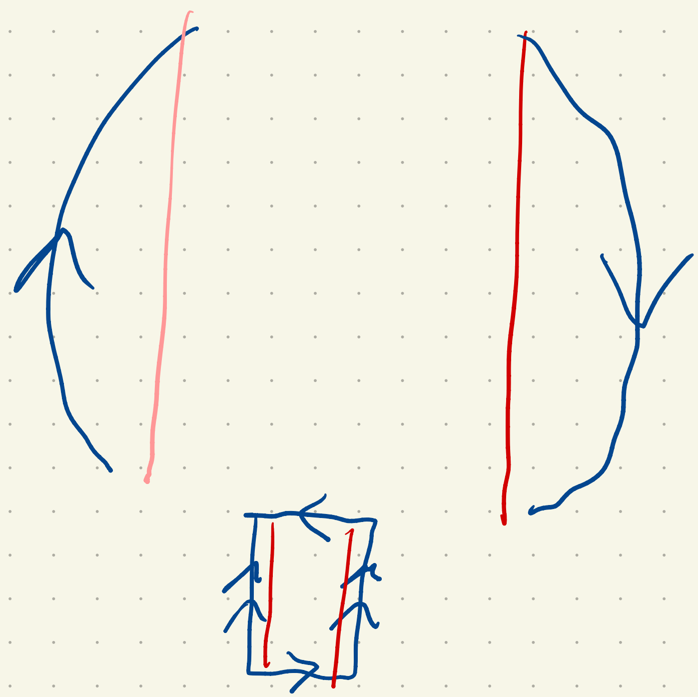


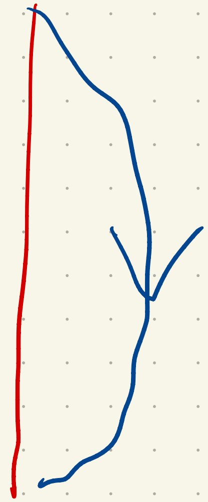


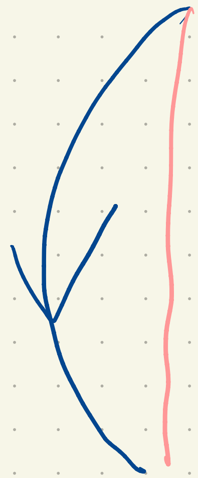


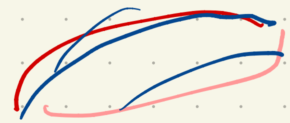
↑ Möbius strip.

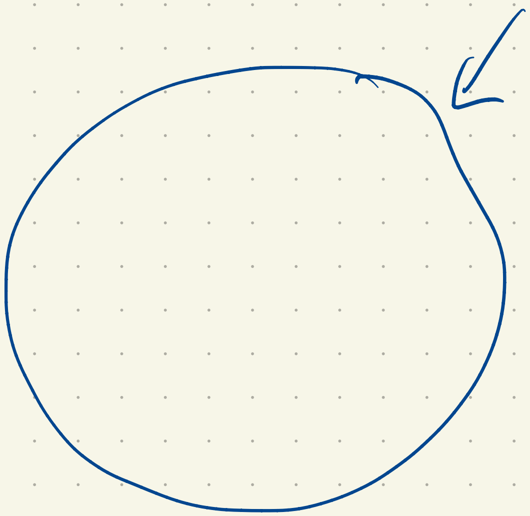


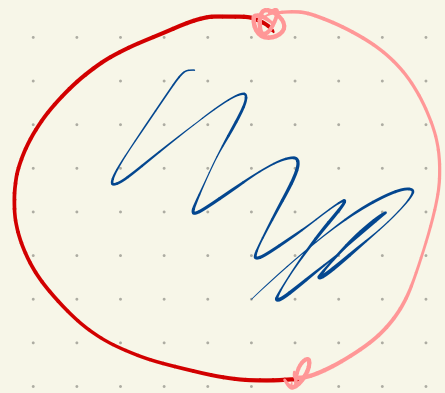






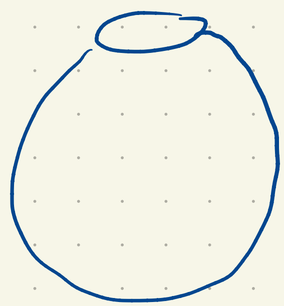






Double.

Single elliptic geometry



$\mathbb{RP}^2$

Real projective plane (dim 2)